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NOTES AND LITERATURE.

ZOÖLOGY.

Shipley and MacBride's Zoölogy.[1] — It may be said in beginning that this is among the best of text-books for elementary college classes in zoölogy. It is fresh, clear, well arranged, and fairly accurate. In its first twelve pages it outlines the basal facts of zoölogy, or better of morphology, including short statements concerning life, protoplasm, and the theory of evolution, and then begins the systematic portion of the volume. The Protozoa come first; then, in order, the Cœlenterata, Porifera, and Cœlomata, — this latter division ending with man. As a result, the flatworms, rotifers, nematodes, etc., appear in the most unexpected place, — the end of the volume. There does not appear any hint that there is a question as to the validity of the cœlom or its use as a basis of classification. In the treatment of each group the authors follow the well-known English model of giving, first a detailed description of some form selected as a type, then a general statement, followed by too brief and inadequate an outline of classification.

Good as the book is as a whole, we find here and there parts which cannot have our full acceptance. In the earlier portions the authors have succeeded well in their attempt, as avowed in the preface, to produce "an elementary treatise on zoölogy which could readily be understood by a student who had no previous knowledge of the subject," but in the later portions, and especially in the treatment of the vertebrates, they fall far short of their ideal. No student, for instance, could gain from these pages, without outside assistance, any adequate idea of the skull or the nephridial system. As the whole work seems so well done, it is hardly just to publish a long list of questionable or erroneous statements which would seem to contradict the good opinion already expressed; and yet, directing attention to some of these shortcomings may lead to their correction in the subsequent editions, which will certainly follow.

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[1] Shipley, A. E., and MacBride, E. W. *Zoölogy, an Elementary Text-Book.* New York, The Macmillan Company, 1901. xxi + 632 pp.

In dealing with the arthropods we object to the violent divorcing of the closely allied Crustacea and arachnids by shoving the insects between them. The conception of a crustacean head composed of five segments is unwarranted, and the retention of the group Myriapoda, in view of the work of Pocock, is indefensible, while the statement (p. 193) that Limulus occurs on our Pacific coast is erroneous. We do not believe that *Helix aspersa* is acclimated in this country to the extent implied on page 198, and on page 221 the terms "squid" and "cuttlefish" are transposed. On page 241 there is an erroneous explanation of the way in which the starfish opens clams and mussels, and we are not inclined to accept the statement (p. 221) that there are over five hundred species of Unionidæ in North America. Certainly many of the species enumerated by Conrad, Lea, and others are not entitled to any such rank.

In their account of the vertebrates the authors have attempted to carry too far homologies between the true vertebrates and the other chordate forms. For instance, the anterior head cavities of the shark cannot be compared to the proboscis cavity of Balanoglossus; and, by the way, what do the authors mean (p. 293) when they relegate the term "Balanoglossus" to the category of popular rather than generic names? On page 332 there is an erroneous conception of the pharynx, no portion of which is stomodeal; the idea of a gonotome (p. 343) has been vigorously combated, and certainly, in view of the comparatively recent researches of Rabl, the pronephric duct should not be described (pp. 342, 352), without a question, as ectodermal in origin. It certainly harmonizes with some theories, but—. Not all Dipnoi (p. 371) have two lung sacs, while some Cæcilians (*e.g.*, Ichthyophis) do have a ductus Botalii (p. 437). Again, it is certainly questionable whether Gadow's conception of the structure of a vertebra (p. 378) is correct; and the statements (p. 330) concerning the optic nerve need revision in the light of the results of Keibel, Assheton, and others, for these nerves are clearly not the stalks uniting the primary optic vesicles with the brain, but true nerves which replace them. There is also a complete crossing of the fibers in the lower vertebrates. The division of birds into Ratitæ and Carinatæ (p. 497) should not be kept up in this year 1901. In view of the statement that the vertebræ of mammals "have no cup-and-ball articulations with one another" (p. 510), we should advise an examination of the cervicals of a horse, and (p. 404) would call attention to the fact that several amphibians have amphicœlous vertebræ.

Here and there the English used is not beyond question, being sometimes inelegant, sometimes confused. The term "urinogenital" has been cast into limbo by Huxley (*Life and Letters*, Vol. II, p. 65), but language is a dangerous thing to discuss. So much depends upon the point of view, and our authors have occupied a peculiar position for seeing things, as we learn from the legend of Fig. 200, which represents the right half of a lamprey "seen from the inside of a female specimen." The mechanical part of the work is well done, and the illustrations, mostly zinc etchings, are clear, and as a rule bring out well the points made in the text.

K.

Notes. — Wallengren (*Jenaische Zeitschrift für Naturwissenschaften*, Bd. XXXVI, pp. 165–180, Taf. VII–VIII) gives a brief but interesting account of the innervation of the proboscis of some of the polychæte worms. The sense cells always occur in the papillæ of the proboscis, never on the surface between papillæ. In Nephthys and Phyllodoce they are radially arranged within a papilla, but in Glycera and Goniada they are grouped into multicellular organs, and single sense cells do not occur. In all cases the distal ends of the sense cells pierce the superficial cuticula, and in Glycera at least they end externally in a brushlike expansion. Proximally the fiber from each cell body either passes undivided to the central organs, as in Nephthys, or gives off branches at the base of the papillæ, forming a subcutaneous nerve plexus as in Glycera. No observations were made on the functions of these organs.

The ganglion cells of the electric lobes in the Torpedo are said by Hatai (*Journal Cincinnati Society of Natural History*, Vol. XX, pp. 1–12, Pl. I) to show an apparent fibrillar structure such as that described long ago by Max Schultze. Bundles of fibrils seem to enter the cell from the dendrites as well as from the neurite. This appearance, however, is due to the form of the protoplasmic reticulum, the meshes of which are much drawn out in the regions of the cell processes, and does not indicate the presence of true nerve fibrillæ. While the bundles of fibrillæ as described by Schultze are thus explained away, those discovered by Bethe and Apàthy belong to another category and probably are real structures. Gradations from the ordinary mesh work to the mesh work with fibrillar appearance have been described by Hatai in the spinal ganglion cells of the white rat.

An ingenious method of recording egg development for the use of fish culturists has been devised by C. Wallich (*United States*